REMARKS/ARGUMENTS

Claims 1-48 are pending. Claims 6 and 13 have been canceled without prejudice and without disclaimer. Claims 1-5, 7-12, 15-17, and 19-26 have been amended. New claims 27-48 have been added. No new matter has been introduced. Applicants believe the claims comply with 35 U.S.C. § 112.

Section 102 Rejection over Watanabe et al. (EP 1,130,514 A2)

Claims 1-5, 7-12, and 14-26 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Watanabe et al. (EP 1,130,514 A2).

Claims 1-5 and 7-9

Applicants respectfully submit that independent claim 1 is novel and patentable over Watanabe et al. because, for instance, Watanabe et al. does not teach or suggest that, based on data stored in the first logical volume are transferred to a second logical volume in a second storage device of the storage devices, the memory is configured to store new mapping information which correlates the first volume identification information with third volume identification information for identifying the second logical volume.

Watanabe et al. discloses switching from an old storage system and a new storage system and, "in the switch, physical port ID (602) of old disk system (103) and physical port ID (602) of new disk system (104) are exchanged." See Abstract and paragraph [0048]. Watanabe et al. does not teach mapping information regarding between a virtual logical volume in a virtualization system and a logical volume related to a portion of a plurality of disk drives in a storage device, transferring data from a first logical volume to a second logical volume, and correlating the volume identification information for identifying the logical volume with respect to the data transfer.

The identification information is used to identify a specific storage area of a storage device, and not merely a port number as in Watanabe et al. For instance, dependent

claim 3 recites that the second volume identification information includes a port identification of the first storage device containing the first logical volume and a Logical Unit Number (LUN) identifying the first logical volume.

For at least the foregoing reasons, claim 1 and claims 2-5 and 7-9 depending therefrom are novel and patentable over Watanabe et al.

Claims 10-12 and 14-15

Applicants respectfully assert that independent claim 10 is novel and patentable over Watanabe et al. because, for instance, Watanabe et al. does not teach or suggest that after data stored in the first logical volume has been transferred to a second logical volume of a second storage device of the storage devices, the first processor is configured to convert the first volume identification information, which is added to another data received from the host system, into third volume identification information for identifying the second logical volume according to new relationship information between the first volume identification information and the third volume identification information and to send data added the third volume identification information to the second storage device.

As discussed above, Watanabe et al. discloses switching from an old storage system and a new storage system and, "in the switch, physical port ID (602) of old disk system (103) and physical port ID (602) of new disk system (104) are exchanged." See Abstract and paragraph [0048]. Watanabe et al. does not teach transferring data from a first logical volume to a second logical volume, and converting the first volume identification information into third volume identification information for identifying the second logical volume according to new relationship information between the first volume identification information and the third volume identification information.

For at least the foregoing reasons, claim 10 and claims 11-12 and 14-15 depending therefrom are novel and patentable over Watanabe et al.

Claims 16-18

Applicants respectfully assert that independent claim 16 is novel and patentable over Watanabe et al. because, for instance, Watanabe et al. does not teach or suggest, based upon transferring the data stored in the first logical volume to the second logical volume, correlating the first volume identification information with third volume identification information for identifying the second logical volume.

As discussed above, Watanabe et al. discloses switching from an old storage system and a new storage system and, "in the switch, physical port ID (602) of old disk system (103) and physical port ID (602) of new disk system (104) are exchanged." See Abstract and paragraph [0048]. Watanabe et al. does not teach transferring data from a first logical volume to a second logical volume, and correlating the volume identification information with third volume identification information for identifying the second logical volume.

For at least the foregoing reasons, claim 16 and claims 17-18 depending therefrom are novel and patentable over Watanabe et al.

Claims 19-23

Applicants respectfully assert that independent claim 19 is novel and patentable over Watanabe et al. because, for instance, Watanabe et al. does not teach or suggest a method of connecting a virtualization system between a host system and a storage device that includes setting, on the virtualization system, the first volume identification information and third volume identification information for identifying a second logical volume related to a portion of a plurality of disk drives in the second storage device, which are used to access the second logical volume by the host system, and transferring another data sent from the host system to the second logical volume by changing the first volume identification information, which is appended to the another data sent from the host system, into third volume identification information after setting the first volume identification information and third volume identification information.

As discussed above, Watanabe et al. discloses switching from an old storage system and a new storage system and, "in the switch, physical port ID (602) of old disk system (103) and physical port ID (602) of new disk system (104) are exchanged." See Abstract and paragraph [0048]. Watanabe et al. does not teach transferring data from a first logical volume to a second logical volume, and correlating the volume identification information with third volume identification information for identifying the second logical volume. Watanabe et al. fails to teach or suggest a method of connecting a virtualization system with the correlation of identification information as claimed.

For at least the foregoing reasons, claim 19 and claims 20-23 depending therefrom are novel and patentable over Watanabe et al.

Claims 24-26

Applicants respectfully assert that independent claim 24 is novel and patentable over Watanabe et al. because, for instance, Watanabe et al. does not teach or suggest sending a second request with a second volume identification information, which is used to identify a first logical volume in a first storage device of the storage devices and relates to the first volume identification information of the first request, to the first logical volume by using relationship between the first volume identification information and the second volume identification information; receiving data corresponding to the second request from the first storage device; sending the received data to the host system; after transferring data stored in the first logical volume to a second logical volume in a second storage device of the storage devices, receiving a third request with the first volume identification information from the host system; sending a fourth request with a third volume identification information, which is used to identify the second logical volume and relates to the first volume identification information of the first request, to the second logical volume by using new relationship between the first volume identification information and the third volume identification information; receiving another data corresponding to the fourth request from the second storage device; and sending the received another data to the host system.

As discussed above, Watanabe et al. discloses switching from an old storage system and a new storage system and, "in the switch, physical port ID (602) of old disk system (103) and physical port ID (602) of new disk system (104) are exchanged." See Abstract and paragraph [0048]. Watanabe et al. fails to teach or suggest a method of controlling data transfer using the correlation of identification information as claimed.

For at least the foregoing reasons, claim 24 and claims 25-26 depending therefrom are novel and patentable over Watanabe et al.

Section 102 Rejection over Nelson et al. (US 2004/0068637 A1)

Claims 1-5, 7-12, and 14-26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Nelson et al. (US 2004/0068637 A1).

Claims 1-5 and 7-9

Applicants respectfully submit that independent claim 1 is novel and patentable over Nelson et al. because, for instance, Nelson et al. does not teach or suggest that, based on data stored in the first logical volume are transferred to a second logical volume in a second storage device of the storage devices, the memory is configured to store new mapping information which correlates the first volume identification information with third volume identification information for identifying the second logical volume.

Nelson et al. discloses a virtual storage system that includes a virtual storage space having a plurality of virtual storage locations, a physical storage space including a plurality of physical storage locations configured to store data, a memory configured to store a plurality of activated pointers which associate a plurality of virtual storage locations with a plurality of the physical storage locations, and a controller configured to deactivate at least some of the activated pointers including extracting the deactivated pointers from the memory, to access a request pertaining to selected data associated with at least one of the deactivated pointers, to activate the deactivated pointers including providing the deactivated pointers in the memory providing reactivated pointers, and to modify at least one of the reactivated pointers responsive to the

request. Nelson et al. is directed to a relationship between the virtual storage space and the physical storage space in the same storage system, and AutoRAID operations involving moving data within the same storage system (see paragraph [0021]). Nelson et al. does not teach mapping information between a virtual logical volume in a virtualization system and a logical volume related to a portion of a plurality of disk drives in a storage device. Nelson et al. does not teach data transfer from a first logical volume of a first storage system to a second logical volume of a second storage system. Nor does it teach correlating the volume identification information for identifying the logical volume with respect to the data transfer.

For at least the foregoing reasons, claim 1 and claims 2-5 and 7-9 depending therefrom are novel and patentable over Nelson et al.

Claims 10-12 and 14-15

Applicants respectfully assert that independent claim 10 is novel and patentable over Nelson et al. because, for instance, Nelson et al. does not teach or suggest that after data stored in the first logical volume has been transferred to a second logical volume of a second storage device of the storage devices, the first processor is configured to convert the first volume identification information, which is added to another data received from the host system, into third volume identification information for identifying the second logical volume according to new relationship information between the first volume identification information and the third volume identification information and to send data added the third volume identification information to the second storage device.

As discussed above, Nelson et al. is directed to AutoRAID operations involving moving data within the same storage system (see paragraph [0021]), and discloses a controller configured to deactivate and reactivate pointers, and modify reactivated pointers. Nelson et al. does not teach transferring data from a first logical volume to a second logical volume, and converting the first volume identification information into third volume identification information for identifying the second logical volume according to new relationship information

between the first volume identification information and the third volume identification information.

For at least the foregoing reasons, claim 10 and claims 11-12 and 14-15 depending therefrom are novel and patentable over Nelson et al.

Claims 16-18

Applicants respectfully assert that independent claim 16 is novel and patentable over Nelson et al. because, for instance, Nelson et al. does not teach or suggest, based upon transferring the data stored in the first logical volume to the second logical volume, correlating the first volume identification information with third volume identification information for identifying the second logical volume.

As discussed above, Nelson et al. is directed to AutoRAID operations involving moving data within the same storage system (see paragraph [0021]), and discloses a controller configured to deactivate and reactivate pointers, and modify reactivated pointers. Nelson et al. does not teach transferring data from a first logical volume to a second logical volume, and correlating the volume identification information with third volume identification information for identifying the second logical volume.

For at least the foregoing reasons, claim 16 and claims 17-18 depending therefrom are novel and patentable over Nelson et al.

Claims 19-23

Applicants respectfully assert that independent claim 19 is novel and patentable over Nelson et al. because, for instance, Nelson et al. does not teach or suggest a method of connecting a virtualization system between a host system and a storage device that includes setting, on the virtualization system, the first volume identification information and third volume identification information for identifying a second logical volume related to a portion of a plurality of disk drives in the second storage device, which are used to access the second logical volume by the host system, and transferring another data sent from the host system to the second

logical volume by changing the first volume identification information, which is appended to the another data sent from the host system, into third volume identification information after setting the first volume identification information and third volume identification information.

As discussed above, Nelson et al. is directed to AutoRAID operations involving moving data within the same storage system (see paragraph [0021]), and discloses a controller configured to deactivate and reactivate pointers, and modify reactivated pointers. Nelson et al. does not teach transferring data from a first logical volume to a second logical volume, and correlating the volume identification information with third volume identification information for identifying the second logical volume. Nelson et al. fails to teach or suggest a method of connecting a virtualization system with the correlation of identification information as claimed.

For at least the foregoing reasons, claim 19 and claims 20-23 depending therefrom are novel and patentable over Nelson et al.

Claims 24-26

Applicants respectfully assert that independent claim 24 is novel and patentable over Nelson et al. because, for instance, Nelson et al. does not teach or suggest sending a second request with a second volume identification information, which is used to identify a first logical volume in a first storage device of the storage devices and relates to the first volume identification information of the first request, to the first logical volume by using relationship between the first volume identification information and the second volume identification information; receiving data corresponding to the second request from the first storage device; sending the received data to the host system; after transferring data stored in the first logical volume to a second logical volume in a second storage device of the storage devices, receiving a third request with the first volume identification information from the host system; sending a fourth request with a third volume identification information, which is used to identify the second logical volume and relates to the first volume identification information of the first request, to the second logical volume by using new relationship between the first volume identification information and the third volume identification information; receiving another data

corresponding to the fourth request from the second storage device; and sending the received another data to the host system.

As discussed above, Nelson et al. is directed to AutoRAID operations involving moving data within the same storage system (see paragraph [0021]), and discloses a controller configured to deactivate and reactivate pointers, and modify reactivated pointers. Nelson et al. fails to teach or suggest a method of controlling data transfer using the correlation of identification information as claimed.

For at least the foregoing reasons, claim 24 and claims 25-26 depending therefrom are novel and patentable over Nelson et al.

Section 102 Rejection over McKean et al. (US 6,647,387 B1)

Claims 1-26 stand rejected under 35 U.S.C. § 102(e) as being anticipated by McKean et al. (US 6,647,387 B1).

Claims 1-5 and 7-9

Applicants respectfully submit that independent claim 1 is novel and patentable over McKean et al. because, for instance, McKean et al. does not teach or suggest that, based on data stored in the first logical volume are transferred to a second logical volume in a second storage device of the storage devices, the memory is configured to store new mapping information which correlates the first volume identification information with third volume identification information for identifying the second logical volume.

McKean et al. discloses a system administrator that configures a data structure in a memory of the controller such that at least a subset of the plurality of port IDs are mapped to particular ones of the number of storage volumes, wherein the controller grants the computer access to only those storage volumes whose mapped port ID corresponds to the target port ID specified in the access request. McKean et al. discloses a port ID/Host mapping table of between a port identifier 128 and host computers with access rights 130 in a FC switch, and a port ID/LU

mapping table of between a port identifier 128 and a logical unit numbers 143 in a disk array controller (see Figs. 2-5 and col. 4, line 12 to col. 7, line 52). McKean et al. does not teach mapping information regarding between a virtual logical volume in a virtualization system and a logical volume related to a portion of a plurality of disk drives in a storage device. McKean et al. does not teach data transfer from a first logical volume of a first storage system to a second logical volume of a second storage system. Nor does it teach correlating the volume identification information for identifying the logical volume with respect to the data transfer.

For at least the foregoing reasons, claim 1 and claims 2-5 and 7-9 depending therefrom are novel and patentable over McKean et al.

Claims 10-12 and 14-15

Applicants respectfully assert that independent claim 10 is novel and patentable over McKean et al. because, for instance, McKean et al. does not teach or suggest that after data stored in the first logical volume has been transferred to a second logical volume of a second storage device of the storage devices, the first processor is configured to convert the first volume identification information, which is added to another data received from the host system, into third volume identification information for identifying the second logical volume according to new relationship information between the first volume identification information and the third volume identification information and to send data added the third volume identification information to the second storage device.

As discussed above, McKean et al. discloses a controller that grants the computer access to only those storage volumes whose mapped port ID corresponds to the target port ID specified in the access request. McKean et al. does not teach transferring data from a first logical volume to a second logical volume, and converting the first volume identification information into third volume identification information for identifying the second logical volume according to new relationship information between the first volume identification information and the third volume identification information.

For at least the foregoing reasons, claim 10 and claims 11-12 and 14-15 depending therefrom are novel and patentable over McKean et al.

Claims 16-18

Applicants respectfully assert that independent claim 16 is novel and patentable over McKean et al. because, for instance, McKean et al. does not teach or suggest, based upon transferring the data stored in the first logical volume to the second logical volume, correlating the first volume identification information with third volume identification information for identifying the second logical volume.

As discussed above, McKean et al. discloses a controller that grants the computer access to only those storage volumes whose mapped port ID corresponds to the target port ID specified in the access request. McKean et al. does not teach transferring data from a first logical volume to a second logical volume, and correlating the volume identification information with third volume identification information for identifying the second logical volume.

For at least the foregoing reasons, claim 16 and claims 17-18 depending therefrom are novel and patentable over McKean et al.

Claims 19-23

Applicants respectfully assert that independent claim 19 is novel and patentable over McKean et al. because, for instance, McKean et al. does not teach or suggest a method of connecting a virtualization system between a host system and a storage device that includes setting, on the virtualization system, the first volume identification information and third volume identification information for identifying a second logical volume related to a portion of a plurality of disk drives in the second storage device, which are used to access the second logical volume by the host system, and transferring another data sent from the host system to the second logical volume by changing the first volume identification information, which is appended to the another data sent from the host system, into third volume identification information after setting the first volume identification information and third volume identification information.

As discussed above, McKean et al. discloses a controller that grants the computer access to only those storage volumes whose mapped port ID corresponds to the target port ID specified in the access request. McKean et al. does not teach transferring data from a first logical volume to a second logical volume, and correlating the volume identification information with third volume identification information for identifying the second logical volume. McKean et al. fails to teach or suggest a method of connecting a virtualization system with the correlation of identification information as claimed.

For at least the foregoing reasons, claim 19 and claims 20-23 depending therefrom are novel and patentable over McKean et al.

Claims 24-26

Applicants respectfully assert that independent claim 24 is novel and patentable over McKean et al. because, for instance, McKean et al. does not teach or suggest sending a second request with a second volume identification information, which is used to identify a first logical volume in a first storage device of the storage devices and relates to the first volume identification information of the first request, to the first logical volume by using relationship between the first volume identification information and the second volume identification information; receiving data corresponding to the second request from the first storage device; sending the received data to the host system; after transferring data stored in the first logical volume to a second logical volume in a second storage device of the storage devices, receiving a third request with the first volume identification information from the host system; sending a fourth request with a third volume identification information, which is used to identify the second logical volume and relates to the first volume identification information of the first request, to the second logical volume by using new relationship between the first volume identification information and the third volume identification information; receiving another data corresponding to the fourth request from the second storage device; and sending the received another data to the host system.

As discussed above, McKean et al. discloses a controller that grants the computer access to only those storage volumes whose mapped port ID corresponds to the target port ID specified in the access request. McKean et al. fails to teach or suggest a method of controlling data transfer using the correlation of identification information as claimed.

For at least the foregoing reasons, claim 24 and claims 25-26 depending therefrom are novel and patentable over McKean et al.

New Claims 27-48

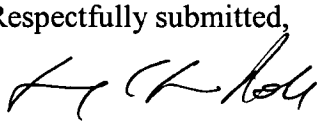
New claims 27-32 depend respectively from claims 1, 10, 16, and 17. Applicants respectfully assert that dependent claims 27-32 are patentable as being directed to additional features of the invention as well as by being dependent from allowable claims 1, 10, 16, and 17. For instance, claims 27, 29, and 31 each recite that the first logical volume corresponds to a first port of the first storage device, and the second logical volume corresponds to a second port of the second storage device. Claims 28, 30, and 32 each recite that when the data stored in the first logical volume has been transferred to the second logical volume the processor correlates the first port identification information with a third port identification information for identifying a third port of the second storage device, and registers the first port identification information and the third port identification information in the mapping information. These features are completely absent from the cited references.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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